Do Autocratic States Trade Less?*

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Abstract

The paper analyzes whether the political regime of a country influences its involvement in international trade. Firstly, we develop a theoretical model that predicts that autocracies trade less than democracies. Secondly, we test the predictions of the model empirically using a panel of more than 130 countries for the years 1962 to 2000. In contrast to the existing literature, we use data on individual importing and exporting countries, rather than a dyadic set-up. In line with the model, we find that autocracies import substantially less than democracies, even after controlling for official trade policies. This finding is very stable and does not depend on a particular set-up or estimation technique.

JEL classification: F13; F14; O24; P45; P51
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1 Introduction

Is there a systematic relationship between economic and political liberalization? Does the political regime of a country systematically affect how involved that country is in international trade? The first question has received a lot of recent attention in the economic literature with studies of the determinants of democracy (Barro, 1999; Acemoglu et al., 2005) and economic freedom (Boockmann and Dreher, 2003; Bjørnskov, 2006; Dreher and Rupprecht, 2007) as well as studies of the relationship between democracy and economic freedom (Sturm and de Haan, 2003; Giavazzi and Tabellini, 2005).[1] The second, more specific question, is, in contrast, much less well researched and the purpose of this paper is to provide some new answers to the question.

Existing knowledge about how political regimes may influence international trade comes from the political science literature. The two main papers in the literature both find that democracy

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[1] Recently convergence and contagion trends of the two variables have also been studied (Nieswiadomy and Strazicich, 2004; Gassebner et al., 2007). Furthermore, the influence of both measures on macroeconomic variables is attracting great interest (e.g. de Haan and Siermann, 1996; de Haan and Sturm, 2000; Sturm and de Haan, 2001; Bjørnskov, 2005).

in one way or the other encourages trade. Mansfield et al. (2000) stress the importance of the congruence between the political regime of pairs of trading countries. They show that pairs of democratic countries trade more than pairs consisting of a democracy and an autocracy.[2] Milner and Kubota (2005) test whether democratization leads to trade policy liberalizations in a sample of developing countries and show that democratic political institutions are one of the main determinants of trade policy in these countries.

We add to this literature in two related ways. First, we argue that the theoretical foundations of the previous studies (discussed in more detail in the next section) overlook the importance of differences in *political accountability* and how these differences induce societies to build more or less effective bureaucratic control mechanisms. Firstly, the lack of political accountability makes it possible for political leaders to extract rents by imposing restrictions on international trade. Moreover, within a hierarchical government structure, the lack of effective control and monitoring mechanisms makes it less likely that political leaders *choose* to build a bureaucratic structure that reduces trade-distorting red tape and other unofficial trade barriers. Our theoretical contribution, therefore, predicts that autocracies – societies with weak political accountability and control structures – trade less with the rest of the world than democracies – societies with strong political accountability and well-developed control structures – for two reasons. Democracy limits the scope for rent extraction via trade restrictions *and* encourages institutional reforms that reduce bureaucratic inefficiencies.

Second, the existing empirical literature focuses on dyads of countries, and for this reason it is not informative about how the political regime affect the trade performance of particular countries. We add to the literature by asking if autocracies trade less than democracies and answering in the affirmative. By doing so we move the focus away from dyads of countries to individual countries. Furthermore, we use a much larger data set, with a longer time horizon and a deeper country coverage than the previous studies. Finally, our empirical design allows us to demonstrate that regime differences in trade policy, while playing a role, cannot account for the observed differences in trade flows. Both the observation that autocracies trade less and the observation that they trade less conditional on trade policy are consistent with our theoretical model.

Some authors have argued that international trade encourages democratization (e.g., Rigobon and Rodrik, 2004, Lopez-Cordova and Meisner, 2005; O'Rourke and Taylor, 2007). This possibility obviously is a concern when trying to estimate the impact of regime type on trade flows: countries

[2]Especially with their theoretical considerations and the inclusion of mixed and autocratic pairs they enhance previous work by Morrow et al. (1998) who only include pairs of democracies in their empirical analysis. Morrow and colleagues also find that democracies trade more with each other.

that are not involved in international trade could be autocracies for *that* reason. We attempt to deal with this issues partly by allowing for unobserved country and time fixed effects in our empirical specification, partly by lagging the empirical indicators used to capture institutional differences between countries and partly by using instrumental variables.

The rest of the paper is organized as follows. In section 2, we present the model, contrast it to existing models and develop the two hypothesizes that govern our empirical investigation. In section 3, we develop our empirical strategy. In section 4, we present our main result. In section 5, we discuss an extensive set of robustness checks, including IV estimates. In section 6, we provide some concluding remarks.

2 A Model of Political Regimes and Trade Flows

In this section, we present a model that illuminates two new channels through which regime types affect trade flows. One channel is the accountability channel: it is harder for citizens in autocratic countries to hold their rulers accountable because of deficient political institutions and, as a consequence, rulers are relatively free to use trade taxes to extract rents. The other channel is the bureaucracy channel: in autocratic societies the monitoring technology is weak and as a consequence it is not in the interest of the ruler to build bureaucratic structures that weed out red tape and other distortionary unofficial trade obstructions introduced by the customs services. Both of these channels suggest that, ceteris paribus, autocracies trade less than democracies and that this continues to be true conditional on similar official trade policies.

Both of these channels are novel. The existing theoretical work on the link between political regime types and trade flows or policy have either focused on the role of international agreements or on the effect of an extension of the voting franchise.[3] The first approach is taken by Mansfield et al. (2000). They study how the incentives to enter a trade agreement differ between pairs of countries with different political regimes. The difference between democracy and autocracy is that the executive in a democracy is constrained by the fact that any trade agreement must be ratified by the legislature while the executive in an autocracy is free of such constraints. With the additional assumptions that the legislature is more protectionist than the executive and that trade negotiations take place sequentially as suggested by Putnam (1988), it follows that pairs of

[3]There is, of course, also a large literature on the political economy of trade protection (e.g., Hillman, 1982; Mayer, 1984; Hillman, 1989; Grossman and Helpman, 1994; Aidt, 1997). The aim of this literature is to explain trade protection within the context of competitive political systems often embodied in some form of democratic institutions rather than to explain differences between broad regimes types such as autocracy and democracy.

democracies agree on a more lenient trade policy than mixed pairs of autocracies and democracies. The reason is that a trade war is worse for a pair of democracies. While this prediction is robust to a range of different bargaining structures, the model is mute on how much pairs of autocracies trade relative to pairs democracies.[4] Our model shares the notion that the critical difference between autocracies and democracies is the lack of effective constraints on the executive in the former, but departs in three important ways. Firstly, we focus on a single country and thus on unilateral trade policy. This allows us to make predictions about how democracy/autocracy – the regime type – affects trade flows and trade policy. Secondly, we focus explicitly on the incentives that the threat of replacement provides for rulers and politicians in different types of political regimes. Moreover, our model has the advantage that democracy and autocracy can be conceptualized along a continuum controlled by three simple parameters. Thirdly, we combine an explicit economic structure with a stylized political structure.

The other approach is taken by Milner and Kubota (2005). In particular, they maintain that the link between democratization and freer trade is an enlargement of the constituency of government that yields a shift of the median voter/supporter. Under autocracy the constituency of government is typically a small group of individuals who are well-endowed with capital. Under democracy with universal suffrage, the median voter is a worker with a low capital endowment. In countries with an advantage in the production of labor-intensive goods (e.g., in developing countries), the Stolper-Samuelson Theorem implies that the median voter benefits from trade liberalization both as a consumer and as a laborer. Our model is complementary to this. While we ignore the effect that political transitions may have on the constituency of government and the role that special interests may play both in an autocracy and in a democracy, we highlight that the degree to which rulers/politicians can be held accountable for their actions and their incentives to invest in "good" institutions vary systematically across regime types.

2.1 The economy

We consider a small open economy that produces two goods and has an infinite time horizon. Good 0 is a numeraire good produced with constant returns to scale with labor as the only input and with an input-output coefficient of 1. Good 1 is produced by labor and sector-specific capital.

[4] Dai (2002) criticizes the theoretical findings of Mansfield et al. (2000) and argues that their main proposition depends on the preferences of the executives and that it is therefore not generally true that democratic pairs trade more than mixed pairs. However, as pointed out by Mansfield et al. (2002) this critique is only valid if the two-level game structure of international negotiations is replaced by a structure in which the legislature of a democracy negotiates directly with its counterpart or with the dictator if paired with an autocracy.

The profit function is $\pi(p)$ where p is the domestic price of the good; p^* is the international price. Domestic supply is $\frac{\partial \pi}{\partial p} = y(p)$. Labour can move freely between sectors and consequently the wage rate in the private sector is $w^p = 1$.

The economy has two types of private agents. A tiny fraction of the population owns the sector-specific capital and they spend all profit income on good 0. A continuum of workers with measure 1 earns wage income as each supplies one unit of labor inelastically to the labor market. Workers consume both goods. Their utility function is $x_0 + u(x_1)$. Optimization subject to the budget constraint yields individual demands, $x_1 = d(p)$ and $x_0 = w^p - pd(p)$, and the indirect utility $v(p, w^p)$. All utilities are discounted with the factor $\beta \in (0, 1)$. Good 1 is traded internationally and net imports are $m(.) = d(p) - y(p)$.[5]

Trade flows are distorted by two types of policy interventions. Firstly, the ruler of the country (the government) can levy a trade tax τ on good 1. If $\tau > 0$ and good 1 is imported (exported) then τ is a tariff (export subsidy) and if $\tau < 0$ and good 1 is imported (exported) then τ is an import subsidy (export tax). To be concrete, we shall refer to τ as a tariff and thus assume that the country imports good 1.[6] Secondly, the bureaucracy in charge of regulating international trade can introduce various unofficial trade barriers, which we shall refer to as *red tape*. The per-unit cost of this is denoted by θ and we can, therefore, define the effective trade distortion, $\tau + \theta$, as the difference between the domestic and the foreign price, i.e., $\tau + \theta = p - p^*$. The revenues from the trade tax are

$$r(\tau, \theta) = \tau m(\tau, \theta) \tag{1}$$

where $\frac{\partial m(\tau,\theta)}{\partial \tau} < 0$, i.e., an increase in τ pushes up the domestic price which reduces domestic demand and increases domestic production. This means that $r(\tau, \theta)$ is a Laffer curve. Moreover, since $\frac{\partial m(\tau,\theta)}{\partial \theta} < 0$, red tape reduces the tax revenues raised for each value of τ.

2.2 Politics

The society is governed by a ruler. The ruler can either be a dictator or a democratically elected politician. We assume that the objective of the ruler is to extract rents from the economy which are spend on the numeraire good and that his utility is $u_R = r(\tau, \theta)$.[7] The ruler must, however,

[5] We note that individual and aggregate demand for good 1 is the same.

[6] It will be clear from the objective function of the ruler that imports or exports are never subsidized. If good 1 is exported, the ruler will impose an export tax and if it is imported he will protect domestic production with a tariff. From the point of view of workers either is equally bad, so it is without loss of generality that we focus on tariffs.

[7] We could extend the model to include a public good. In this case, the ruler can only keep the difference between what is spend on public goods and total tax revenues. All our results are essentially unaffected and we prefer, for

employ a bureaucracy to run the customs services. The task of the appointed bureaucrat is to collect tariffs, which are handed over to the ruler, but in the process he might create red tape θ. We assume that the bureaucrat benefits from red tape, e.g., because it allows him to collect bribes or because it gives the customs service more power. Red tape can either be low (absent) or high, i.e., $\theta \in \{0, \overline{\theta}\}$ where $\overline{\theta} > 0$. The rent that the bureaucrat gets from introducing red tape is θB where B is a positive constant. For simplicity, we assume that the bureaucrat only holds office for one period and that he consumes good 0 only.[8] Red tape is not in the interest of the ruler as it reduces trade flows (and hence tariff revenues), so he might want to design incentives for the bureaucrat to avoid red tape. We focus on two control instruments: monitoring and efficiency wages.

While we take monitoring to be an exogenous feature of the institutional environment, the public sector wage is endogenous. The monitoring technology discovers malfeasance with probability $1 - z$ in case of which the bureaucrat is immediately fired and he loses his wage income from the public sector and the rent from red tape and returns to the private sector where he receives w^p starting from next period onwards. With probability z, he is not discovered and he keeps the public sector wage in the current period and any rent from creating red tape and returns to the private sector in the subsequent period. We can write the expected utility of a bureaucrat who introduces red tape in period t as

$$z\left(w_t + \overline{\theta}B\right) + \frac{\beta w^p}{1-\beta} \tag{2}$$

and that of a bureaucrat who refrains from doing so as $w_t + \frac{\beta w^p}{1-\beta}$ where w is the public sector wage.[9] The second control instrument is the public sector wage which is endogenous and designed by the ruler and financed out of tariff revenues. As suggested by Becker and Stigler (1974), the ruler may offer an efficiency wage that effectively ensures that no red tape is introduced:

$$w^e = \frac{z}{1-z}\overline{\theta}B. \tag{3}$$

Faced with the public sector wage w, the optimal choice of the bureaucrat in office in any period

simplicity, to stick to Leviathan assumption as in Brennan and Buchanan (1980). More importantly, we do not want to assume that the intrinsic objectives of "rulers" in autocracies and democracies are different; rather we want to argue that it is the quality of institutions that forces democratically elected rulers to behave differently from dictators. There is ample evidence that rulers in particular in societies with weak institutions can extract significant rents (see, e.g., Olken, 2006).

[8] This is not important for the results and it is straight forward to extend the model to allow bureaucrats to hold office forever.

[9] To ensure a positive supply of bureaucrats we assume that $\overline{\theta}B > 1$

t can be summarized as follows:

$$\theta_t(w_t) = \begin{cases} 0 & \text{if } w_t \geq w^e \\ \overline{\theta} & \text{if } w_t < w^e \end{cases}. \tag{4}$$

In the absence of moderating incentives, rulers design a trade policy (τ) and a wage structure for the bureaucracy (w_t) to extract the maximum rent each period. To avoid this, societies develop political institutions that moderate the behavior of rulers. These institutions partly allow citizens to hold their rulers accountable and to replace the incumbent if he extracts too much rent and partly improves the monitoring capacity of the government (z). In a fully democratic society, elections serve the first purpose (Ferejohn, 1986; Persson and Tabellini, 2000, chapter 3), but even in autocracies and dictatorships, rulers may be constrained by the threat of a coup or a popular revolt (Acemoglu and Robinson, 2001). Formally, at the beginning of each period, workers announce a performance standard that the ruler has to satisfy to get "reappointed" at the end of the period. Workers base their performance standard on the level of utility they get from the policies implemented by the ruler and the bureaucrat. We denote the performance standard announced at the beginning of period t by $\widehat{v}_t$. The standard requires the ruler to introduce a policy package (τ_t, w_t) that yields at least the utility level $\widehat{v}_t$ in order to be considered for reappointment. We assume that only workers have political voice (set standards). This assumption is made for simplicity. We can think of it as a situation in which the ruler needs to please the masses; an assumption that makes sense in a democracy, but also in many cases in autocracies.[10]

In a well-functioning democracy, a ruler (politician) who complies with the standard is guaranteed reappointment while a ruler (politician) who does not comply is certain of dismissal. These promises are, however, not equally credible in all societies, and in autocracies or dysfunctional democracies intimidation of the opposition, electoral fraud etc. can significantly reduce the degree of accountability. We make a distinction between two types of governance failures:

Definition 1 *(p-failure) Workers can only promise to reappoint a ruler who satisfies $\widehat{v}_t$ in period t with probability $p \in [0,1]$.*

Definition 2 *(q-failure) Workers can only promise to dismiss a ruler who does not satisfy $\widehat{v}_t$ in period t with probability $1-q \in [0,1]$.*

[10] The model could be extended to allow the owners of specific capital to lobby (offer bribes to) the ruler. This could be done along the lines of Aidt and Dutta (2004), but a formal analysis would distract from our current purposes.

A p-failure arises when workers cannot promise for sure to reward good behavior with reappointment. This type of problem, typically, arises in situations with volatile voter turnout or general apathy among the electorate, but otherwise strong democratic institutions. A q-failure arises when citizens cannot, in all cases, dismiss under-performing rulers, and a society with q close to 1 can be interpreted as a dictatorship. Together with the monitoring technology z, these failures capture *exogenous* variations in the quality of institutions and, as we shall see, allow us to define the difference between autocracies with weak institutions (low p, high q, high z) and democracies with strong institutions (high p, low q, low z).

The interaction between rulers, bureaucrats and workers can be summarized as follows. At the beginning of each period, a new bureaucrat enters office and workers announce a performance standard. Next, the ruler decides on the tariff and the public wage for the period. After that the bureaucrat decides how much red tape to introduce and the monitoring technology determines if he is fired prematurely. At the end of the period, workers observe their utility levels, judge the performance of the ruler against the utility standard and decide if they want to reappoint the incumbent ruler or not. This together with random events, as captured by p and q, determines whether the incumbent is, in fact, replaced by another ruler. After this the sequence of events is repeated.

2.3 Analysis and Results

Given a sequence of standards $\{\widehat{v}_t\}_{t=0}^{\infty}$, the ruler faces the choice between complying and hoping to stay in power (which allows him to collect rents in the future) or not complying and collecting the maximum rent now.

If the ruler decides not to comply at time t (i.e., to deviate (D)), he sets

$$\left\{\tau_t^D, w_t^D\right\} = \arg\max_{\tau_t, w_t} r(\tau_t, \theta\left(w_t\right)) - E(w_t). \tag{5}$$

In doing so, he anticipates how the public wage affects the choices of the bureaucrat. It is costly to provide wage incentives and the expected wage bill is

$$E(w_t) = \begin{cases} zw_t & \text{if } w_t < w^e \\ w_t & \text{if } w_t \geq w^e \end{cases}. \tag{6}$$

The bureaucrat acknowledges that he only has to pay the wage if the bureaucrat is not discovered

adding red tape. Clearly, either $w_t^D = 0$ or $w_t^D = w^e$ is optimal. In the former case, the optimal tariff is

$$\tau^{D1} = \arg\max_{\tau_t} r(\tau_t, \overline{\theta}) \tag{7}$$

and the rent is $r\left(\tau^{D1}, \overline{\theta}\right)$ for all t, and in the later case, it is

$$\tau^{D2} = \arg\max_{\tau_t} r(\tau_t, 0) - w^e \tag{8}$$

and the rent is $r(\tau^{D2}, 0) - w^e$ for all t. In either case, the workers attempt to replace the ruler at time $t+1$ but with probability q fail to do so. The ruler's expected payoff is

$$V_t(D) = \max\left\{r(\tau^{D1}, \overline{\theta}), r(\tau^{D2}, 0) - w^e\right\} + \beta q V_{t+1}^*, \tag{9}$$

where V_{t+1}^* is the continuation value of holding office at the beginning of period $t+1$. The optimal deviation policy depends on the quality of the monitoring institutions as described by the first Lemma.

Lemma 1 *(The Optimal Deviation Policy) Let*

$$\Delta R^D \equiv \frac{r(\tau^{D2}, 0) - r(\tau^{D1}, \overline{\theta})}{\overline{\theta} B} > 0$$

Then

1. *If* $\frac{z}{1-z} \geq \Delta R^D$, *then* $\left(\tau^{D1}, 0\right)$ *is optimal.*
2. *If* $\frac{z}{1-z} < \Delta R^D$, *then* $\left(\tau^{D2}, w^e\right)$ *is optimal.*

Proof. The Lemma follows from a straight forward comparison of the net rents collected by the ruler in each case using equation (3) ■

We note that the quality of monitoring (z) effectively determines if it is in the interest of the ruler to maintain strong wage incentives for the bureaucrat or not. If the monitoring technology is effective (z is low), it is cheap to pay efficiency wages and optimal to weed out red tape even for a ruler that has decided to disregard the demands of his citizens. If, on the other hand, the monitoring technology is ineffective (z is high), then it is better for the ruler to accept red tape and focus on maximizing tariff revenues subject to that.

If the ruler decides to comply in period t, he selects the policy package

$$\left\{\tau_t^C, w_t^C\right\} = \arg\max_{\tau,w} r(\tau_t, \theta(w_t)) - E(w_t) \tag{10}$$

subject to $v(\tau_t, \theta_t) \geq \widehat{v}_t$. Again, the ruler either sets $w_t^C = 0$ or $w_t^C = w^e$ and we note that

$$\tau^{C1}(\widehat{v}_t) = \arg\max_{\tau_t} r(\tau_t, \overline{\theta}) \tag{11}$$

subject to $v(\tau_t, \overline{\theta}) \geq \widehat{v}_t$ is optimal in the former case and that

$$\tau^{C2}(\widehat{v}_t) = \arg\max_{\tau_t} r(\tau_t, 0) - w^e \tag{12}$$

subject to $v(\tau_t, 0) \geq \widehat{v}_t$ is optimal in the later. Since $v(\tau, \theta)$ is decreasing in τ, the ruler must reduce the tariff below the respective rent maximizing levels to satisfy the constraints. The expected payoff is

$$V_t(C) = \max\left\{r(\tau^{C1}(\widehat{v}_t), \overline{\theta}), r(\tau^{C2}(\widehat{v}_t), 0) - w^e\right\} + \beta p V_{t+1}^*. \tag{13}$$

As shown by the next Lemma, the quality of the monitoring institutions also plays a key role for the choice between the two possible compliance strategies.

Lemma 2 *(Within Period Optimal Compliance). Suppose that* $\widehat{v}_t \geq \max\left\{v\left(\tau^{D1}, \overline{\theta}\right), v(\tau^{D2}, 0)\right\}$ *and let*

$$\Delta R_t^C \equiv \frac{r\left(\tau^{C2}\left(\widehat{v}_t\right), 0\right) - r\left(\tau^{C1}\left(\widehat{v}_t\right), \overline{\theta}\right)}{\overline{\theta} B} > 0.$$

Then

1. If $\frac{z}{1-z} \geq \Delta R_t^C$, then the optimal compliance policy is $\left(\tau^{C1}\left(\widehat{v}_t\right), 0\right)$.
2. If $\frac{z}{1-z} < \Delta R_t^C$, then the optimal compliance policy is $\left(\tau^{C2}\left(\widehat{v}_t\right), w^e\right)$.

Proof. The Lemma follows from a straight forward comparison of the net rents collected by the ruler in each case using equation (3) ■

The sequence of performance standards is incentive compatible if and only if at all t

$$V_t(C) \geq V_t(D). \tag{14}$$

Workers select the sequence of standards that yields the highest lifetime utility subject to incentive compatibility. The structure of the model implies that the optimal choice is stationary; that is, $\widehat{v}_t = \widehat{v}^*$ for all t where $\widehat{v}^*$ is defined by

$$\begin{aligned} & \max\left\{r(\tau^{C1}(\widehat{v}^*),\overline{\theta}), r(\tau^{C2}(\widehat{v}^*),0) - w^e\right\} \\ = \quad & \frac{1-\beta p}{1-\beta q}\max\left\{r(\tau^{D1},\overline{\theta}), r(\tau^{D2},0) - w^e\right\}. \end{aligned} \tag{15}$$

Incentive compatibility requires that $p > q$; otherwise, institutions are so bad that no ruler would ever comply with any standard other than the rent maximizing one. It is also clear from equation (15) that workers' welfare is increasing in the quality of institutions, i.e., that $\frac{\partial \widehat{v}^*}{\partial p} > 0$ and $\frac{\partial \widehat{v}^*}{\partial q} < 0$.

We are interested in why the volume of international trade is different in autocracies and democracies. To study this, we shall make a comparison between two extremes. At one end of the spectrum, we have a society with well-functioning democratic institutions and an effective monitoring technology: $p = 1$, $q = 0$ and $z = 0$. At the other end, we have a society with seriously dysfunctional institutions: $p \leq q$ and $z = 1$. We shall refer to the former as a "democracy" and to the later as an "autocracy" acknowledging that in the real world most societies fall somewhere in between these extremes. The following Proposition states the main implications of the model.

Proposition 1 *(Regime Type and the Volume of Trade).*

1. *The effective trade distortion is higher in autocracies than in democracies and as a consequence, autocracies trade less with the rest of the world than democracies.*

2. *For given official trade policy (τ), autocracies trade less with the rest of the world than democracies because of differences in red tape and other unofficial trade distortions.*

Proof. Consider an autocracy with $p \leq q$ and $z = 1$. Lemma 1 implies that the optimal deviation entails $w^D = 0$ and $\tau^D = \tau^{D1}$, while Lemma 2 implies that the optimal compliance policy is $w^C = 0$ and $\tau^C = \tau^{C1}$ for all t. However, since $p \leq q$, equation (15) implies that incentive compatibility fails and so, the ruler implements $\tau = \tau^{D1} = \tau^{C1}(v\left(\tau^{D1},\overline{\theta}\right))$ and $w = 0$ each period until he is replaced by a new ruler who behaves likewise. Workers get $v\left(\tau^{D1},\overline{\theta}\right)$ and the effective trade distortion is $\tau^{D1} + \overline{\theta}$. Consider, next, a democracy with $p = 1$, $q = 0$ and $z = 0$. Lemmas 1 and 2 imply that $w^D = w^C = w^e$ and that $\tau^D = \tau^{D2}$ and $\tau^C = \tau^{C2}$ at all t. The effective trade distortion is τ^{C2}. Let v^{**} denote equilibrium utility of a worker. Equation (15) implies that the best incentive compatible standard under democracy v^{**} entails higher utility

than $v\left(\tau^{D1}, \overline{\theta}\right)$. It follows that $\tau_1^D + \overline{\theta} > \tau^{C2}(v^{**})$ and thus, as stated in part 1 of the Proposition, that autocracies trade less. Part 2 follows from the observation that autocracies allow red tape while democracies do not ■

The first part of the Proposition shows that autocracies trade less than democracies. The source of this result is differences in the quality of institutions. These differences affect trade flows through two channels. First, autocracies have weak political institutions as captured by p and q. This allows autocratic rulers to extract more rents than politicians in a democracy. The implication is higher trade taxes under autocratic rule and consequently less imports (or exports). An improvement in accountability (better institutions) reduces trade taxes and encourages more trade. Second, autocracies also have weak monitoring institutions (as captured by z). As a consequence of this, autocratic rulers have little incentive to weed out red tape and other distortionary unofficial trade obstructions introduced by the bureaucrats in the customs services.[11] In contrast, in a democracy with a more effective monitoring system, it is cheap to pay efficiency wages. It is optimal for rulers to enhance institutional quality of the bureaucracy and this reduces red tape and encourages trade flows. The second part of the Proposition shows that precisely because of differences in the incentives for rulers to pay efficiency wages in the two types of societies, autocracies trade less than democracies for a given *official trade policy*.

3 Empirical Specification

We want to estimate the relationship between the political regime of a country and its involvement in international trade thereby testing the two implications of our model listed in Proposition 1. To this end, we employ a standard gravity model of trade for a sample of up to 130 countries covering the years from 1962 to 2000. As the dependent variable, we use real import of country i from country e in year t rather than bilateral trade flows between pairs of countries.[12] Through this choice, we avoid what Baldwin (2006) calls the "silver-medal of gravity mistakes"; the problem that regressions with average bilateral trade flows as the dependent variable are subject to a sizable upward bias when trade is unbalanced. More specifically, our baseline specification is the following panel model

[11] This notion corresponds to the findings of Gorodnichenko and Sabirianova Peter (2007). Focusing on the Ukraine, they find that although public sector employees receive approximately 30% lower wages as compared to those in the private sector their level of consumer expenditures and asset holdings is essentially identical. This indicates that bureaucrats receive "unofficial payments" of sizable amounts.

[12] Data on nominal import flows comes from Feenstra (2000) and are converted into real import flows using the US GDP deflator. This is possible because nominal world trade is measured in dollars.

$$\begin{aligned} \ln(\textit{real import})_{iet} &= \beta_1 \textit{regime}_{it-1} + \beta_2 \textit{regime}_{et-1} + \beta_3 \ln(gdp_{it}) + \\ &\beta_4 \ln(gdp_{et}) + \beta_5 \textit{landlocked}_{iet} + \beta_6 \ln(\textit{distance}_{iet}) + \\ &\lambda X_{iet} + \alpha_i + \gamma_e + \delta_t + \varepsilon_{iet}, \end{aligned} \tag{16}$$

where *(real import)*$_{iet}$ is real imports of country i from country e in year t, $\textit{regime}_{it-1}$ and $\textit{regime}_{et-1}$ are lagged values of particular measures of regime type (democracy/autocracy) of the importing and exporting country, respectively (to be discussed below), gdp_{it} and gdp_{et} are real GDP of the importing and exporting country, respectively, $\textit{landlocked}_{iet}$ is a dummy variable taking the value of 1 if at least one trading partner is land locked, $\textit{distance}_{iet}$ is the distance between the most populated cities of the trading pair and ε_{iet} is an error term with zero mean. The vector X_{iet} contains a number of dummy variables that measure colonial ties. In particular, the following variables are included: a dummy variable equal to 1 if the two trading partners share the same official language (*common language)*, a dummy variable equal to 1 if the trading partners have a common border (*common border*), a dummy variable equal to 1 if the trading partners were ever in a colonial relationship (*colonial ties*), a dummy variable equal to 1 if the trading partners share a common colonizer post 1945 (*common colonizer*), a dummy variable equal to 1 if the trading partners were in a colonial relationships post 1945 (*colony post 1945*), and a dummy taking the value of 1 if the trading partners are or were in the past the same nation (*same country*). Our choice of gravity variables follows Rose (2004) and we have no interest in these variables except as control variables.[13,14] We list the sources and exact definitions of all the variables used in our analysis in Table 5.

It is important to notice that our panel model allows us to estimate the effect of regime type on trade flows separately for an importing and for an exporting country. This allows us to test the theoretical implications of our model which would not be possible within the pair wise set-up of Morrow et al. (1998), Mansfield et al. (2000) and others.

Given the difficulty of obtaining reliable quantitative measures of regime type, we use three different indicators as proxies. They capture different aspects of the institutional environment and all have their own flaws and advantages. The first indicator is the Polity IV index constructed by Gurr et al. (2003).[15] The index is measured on a scale from -10 (autocracy) to 10 (democracy).

[13] For further details on the gravity model, we refer to Anderson and van Wincoop (2003).
[14] However, we may note that they are all significant and have the correct sign.
[15] The Polity IV index or more accurately the "polity2" index summarizes different indicators of political authority

In order to make the results obtained with this indicator comparable to those obtained with the two other indicators that we use, we re-code the variable on a scale from 1 to 21 with higher values indicating that a society is more autocratic. The second indicator is the average of two indicators called "Political Rights" and "Civil Liberties" constructed by Freedom House (2006). The resulting indicator runs from 1 to 7 with higher values indicating that a society is more autocratic. The third indicator is the regime type indicator constructed by Alvarez et al. (1996) and Przeworski et al. (2000) and updated until 2000 by Cheibub and Ghandi (2004). Democracy is essentially defined as a political system in which incumbents can lose elections and are forced to comply with the results of elections. More specifically, a country is classified as a democracy if the executive and the legislature is filled through contested elections, where more than one party has a chance of winning. The resulting dummy variable takes the value of 1 for autocracies and zero for democracies.

It is hard to say which of the indicators is the "best". They have all drawn critique. The Polity IV index has been criticized for the way values are assigned to its various subcomponents. Freedom House sometimes draw critique because its indicators are completely survey based. Przeworski's regime type indicator uses the most clear-cut definition of the three, but has the disadvantage of being a dummy variable without "scales of grey". However, the three indicators focus on slightly different aspects of political institutions and can therefore perhaps best be viewed as complements rather than substitute measures of democracy/autocracy. The Polity IV index is basically a measure of political competition that ignores how widely extended the voting franchise is and other aspects of popular participation in politics.[16] The Freedom House index focuses more on political rights and civil liberties than on de facto political competition and participation. Przeworski et al. (2000) focus on a combination of political participation and contestability of political power. The complementarity of the three measures in another good reason to use all three indicators in the analysis. Finally, as argued by Milner and Kubota (2005), it takes time for changes in political institutions to affect trade patterns and the effects of democratic transitions are likely to be long-lasting. For this reason, we enter the three institutional indicators either with a one year lag or as the average of the five preceding years. This also mitigates potential endogeneity problems arising if international trade encourages the development of democratic institutions.

patterns to measure three key aspects of a country's political system. The three aspects are: i) competitiveness and openness in the process of executive recruitment; ii) constraints on the chief executive and iii) competitiveness and regulation of political participation. A weighted sum of the components is used to construct two summary variables, measuring democracy on a scale from 0 to 10 and autocracy from -10 to 0. The Polity IV index is the sum of these two sub-indexes.

[16] See Aidt and Eterovic (2007) for a discussion of this.

All regressions include fixed effects for the importing and exporting country (α_i, γ_e) as well as year fixed effects (δ_t). This is a variant of the approach adopted by Feenstra (2004) who introduced the notion of country-specific effects as multilateral resistance terms. The country effects control for unobserved country characteristics that are fixed over time with the subtlety that we allow these unobservable effects to differ between importers and exporters, even if the same country is involved in import and export. The importance of correcting for these importer, exporter and time fixed effects is pointed out by Baltagi et al. (2003) as well as Baldwin (2006) who calls the omission of these effects the "gold-medal of gravity mistakes".

The baseline model allows us to test the first implication of the model, i.e., that autocratic countries trade less. The second implication of our model is that autocratic countries trade less *conditional* on official trade policy. To test this, we need to extend the baseline model with a proxy for trade policy. Given the many different forms that trade restrictions can take and the well-known difficulties in measuring trade policy (see, e.g., Milner and Kubota, 2005), we opt to include a multidimensional index. In particular, we employ the restriction sub-index from the KOF Index of Globalization (see Dreher, 2006). This *restriction index* combines information on non-tariff import barriers, mean tariff rates, other taxes on international trade, and capital account restrictions. It ranges from 1 to 10 with higher values indicating fewer restrictions.

4 Main Empirical Results

The results of the estimation of equation (16) are shown in Table 1. We may begin by noting that all control variables have the correct sign and are highly significant with the exception of the landlockedness dummy variable. Given the numerous existing gravity studies, we shall refrain from interpreting the coefficients on these covariates.[17]

More importantly, it is apparent that all three regime type indicators yield the same result: autocracies trade significantly less. The results have one more factor in common. The estimated coefficients on the regime type indicators are largest in the specifications that use five years averages. This indicates that the effect of regime type on trade is persistent; a finding that is in line with that of Milner and Kubota (2005). Furthermore, it suggests that changes in the trade flows take place gradually after a regime change.

Given its dichotomous nature, Przeworski's regime type indicator is the easiest to interpret. According to this indicator, autocracies have 23.7-28.6% less imports and 20.2-21.8% less exports,

[17] See, e.g., Rose (2004) for interpretations.

ceteris paribus. Both the Polity IV and the Freedom House index are measured on an ordinal scale. On the 1 to 21 points scale of the Polity IV index, a one point move towards autocracy reduces imports by 1.8-2.3% and exports by 1.2-1.4%, ceteris paribus. This means that if a hypothetical country were to undergo a transition from full democracy to complete autocracy, it would lose about 36% of its imports and about 24% of its exports. On the 1 to 7 scale of the Freedom House index, a hypothetical country that went through the same transition would result lose about 33% of its imports and about 30% of its exports. To give a more concrete example. Imagine that the political regime of Switzerland was transformed into that of Myanmar in the year 2000. The consequence would be a reduction of imports and exports of 29.6% and 20.4% according to the Polity IV index and 33% and 30% according to Freedom House index, ceteris paribus. Although there are differences, it is striking how similar the results obtained with the three different indicators are.

Milner and Kubota (2005) show in a sample of developing countries that democracies have lower tariff rates than autocracies. Thus, the results reported in Table 1 – autocracies trade less – could simply be a result of this effect. To investigate this, we add the restriction index, introduced in the previous section, to the specification in equation (16) and re-run the estimation. The results are shown in Table 2. Not surprisingly, the restriction index has a positive impact on trade flows and is highly significant for importing countries. This indicates that a country with few trade restrictions imports more. For exporting countries, the coefficients on the restriction index is positive and significant in some specifications. This could be interpreted as a "reward", i.e., a country exports more if it lowers its import barriers. However, one should not read too much into this result.

More importantly, we see from Table 2 that the main finding from the baseline model persists: autocracies trade less, even after controlling for differences in trade policy. The coefficients on the Polity IV index and on Przeworski's regime type indicator are somewhat lower than those reported in Table 1, but they are still highly significant. The coefficients on the Freedom House index remain virtually unchanged. This finding shows that the tariff channel, as identified by Milner and Kubota (2005), is not the only transmission mechanism. Our model points to two alternative transmission channels (the accountability channel and the bureaucracy channel) and our findings are consistent with the presence of both.

5 Robustness Analysis and IV Estimates

To see whether the results reported in Tables 1 and 2 are sensitive to changes in the specification and estimation method, we have conducted an extensive set of tests of robustness. We use the specification including the restriction index as the baseline (as reported in Table 2).

Firstly, we extend the model with additional control variables that have been proposed by, e.g., Rose (2004) as determinants of international trade flows. These variables are: log of GDP per capita, log of population, a dummy variable indicating a common currency, a dummy variable indicating a generalized system of preferences, a dummy variable taking on the value 1 if the trading partners are members in the same regional trading agreement, a dummy indicating WTO/GATT membership, and, finally, all of the above at the same time.[18] The results of this are presented in Table 3. To save space, we only display the coefficients on the regime type indicators (*autoc*) in the table. We see that the results are not much affected by the inclusion of these additional variables. The significance level remains unchanged and the changes in the size of the coefficients are minuscule.

Secondly, to further elaborate on the robustness of the baseline results, we have employed different estimation techniques that reduce the risk that outliers are driving the results. Again, the specification of Table 2 is used as the starting point and the results are presented in the top of Table 4 and we only report the results for the regime type indicators. As a first step, we re-estimated the model using re-weighted least squares (RLS). This robust regression technique weighs observations in an iterative process. Starting with OLS, estimates are obtained through weighted least squares where observations with relatively large residuals get smaller weights. We see that the coefficients remain highly significant although their magnitudes are somewhat reduced. Comparing the coefficients reported in Tables 2 and 4, we see that the coefficients on the political regime indicator of importing countries are approximately halved, while the coefficients for exporting countries change only minimally. Next, we used the least absolute value estimator, which minimizes the sum of the absolute deviations from the median.[19] Although the magnitude of the coefficient on the regime type indicator of importing countries is somewhat smaller, the results are comparable to those obtained with the RLS estimator and the regime type effect remains highly significant.

Thirdly, we have altered the sample and tested whether this has consequences for the results. First, we have extended the sample up to the year 2003 using trade data taken from the United

[18] Due to perfect collinearity it is not possible to include log(GDP), log(GDP per capita) and log(population) in the same regression. The results in Table 3 show the outcome without population. However, the results do not change if log(GDP per capita) is substituted by log(population).

[19] This is also known as mean absolute deviation (MAD) or L1 norm regression.

Nations Statistical Division Commodity Trade Data Base (Comtrade, 2006).[20] Doing so does not change the results much. Second, Milner and Kubota (2005) focus on developing countries only and to allow for a more direct comparison, we restricted the sample to include only developing countries, either as importers or as exporters, respectively.[21] We see that this reduces the magnitude of the estimated effect of regime type on trade, but with the exception of one regression, the effect remains significant. So, even within developing countries, more autocratic countries trade less conditional on trade policy.

Fourthly, although we use lags of the three regime type indicators, this might not be enough to avoid all endogeneity problems and one concern about our results is that they may be contaminated by feedback effects from trade to democracy. As argued by, e.g., Lopez-Cordova and Meisner (2005), involvement in international trade may foster democracy. If so, the coefficients on the regime type indicators reported in Table 1 to 4 may be biased. To deal with this issue, we have re-estimated the model using instrumental variables (IV) techniques. In choosing the instruments, we largely follow the existing literature. Milner and Kubota (2005) use the average age of the parties in the political system as an instrument for regime type.[22] As a second instrument, we use an ordinal index of checks and balances constructed by Keefer and Stasavage (2003). Finally, we use the percentage of votes cast in line with the Group of 7 (G7) countries in the United Nations General Assembly in the IV regressions. Dreher and Sturm (2006) show that more democratic countries vote more in line with the G7. We contend that neither of these variables are correlated with the error term in equation (16). We report a summary of the results using all three instruments simultaneously in Table 4. In all specifications, the first stage F-statistic, indicating the relevance of the instruments, easily passes the threshold of 10 as proposed by Staiger and Stock (1997). We also report the p-value of the Sargan-Hansen test for over-identification and note that the test fails to reject at the 10 percent level in all, but one, specification. All specifications basically show the same pattern, namely that our previous results if anything *under-estimated* the effect of autocracy on imports. All coefficients on the regime type indicators for importing countries remain significant at the one percent level and significantly increase their (absolute) size. In contrast, the coefficients on the regime type indicators for exporting countries hardly change their size but are no longer significant at conventional levels, with the exception of the specification with the five year average

[20] Feenstra's (2000) data is based on this data source.

[21] We follow the WTO convention of coding the following countries as developed: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Great Britain, Greece, Iceland, Ireland, Italy, Japan, Liechtenstein, Luxemburg, The Netherlands, Norway, New Zealand, Portugal, Spain, Sweden, Switzerland, USA. All other countries are coded as developing countries.

[22] The source for this data is Beck et al. (2001).

of the Freedom House index. Based on the IV estimates, we conclude that our previous results can be interpreted as a lower bound of the effect of autocracy on imports, while our baseline results on the impact of regime type on exports cannot be considered robust.

6 Conclusions

The question that motivates this paper is a simple one: does the political regime of a country systematically affect how involved the country is in international trade? Our theoretical model provides two reasons why the answer to this question is likely to be yes. In contrast to previous theoretical work, we argue that the root cause of regime differences in trade flows is differences in political accountability. These differences affect trade flows directly through the impact on trade taxes (which are more prevalent in autocracies than in democracies), but they also work through a more subtle indirect channel. Rulers of societies with weak accountability institutions have no incentive to build up bureaucratic control structures that reduce red tape and other largely unobserved trade distortions introduced by the customs service. As a consequence, the theory suggests that not only do autocracies trade less but that they trade less conditional on official trade policy.

We test the implications of the model within the framework of a standard gravity model of international trade. This design allows us to distinguish between the effects of the political regime of an importing and of an exporting country. We find that autocracies trade significantly less than democracies, even after controlling for differences in trade policy. The magnitude of the effect is substantial: autocracies have between 4.3% and 23.3% less imports and between 16.1% and 19.7% less exports, ceteris paribus. These results are robust to a battery of different estimation techniques and our instrumental variables estimates suggest that the baseline estimate for the impact of autocracy on imports can be considered a lower bound, while the baseline estimate for the impact on export cannot be considered robust. Overall, our analysis shows that autocracies import less (and maybe export less) and that this effect is not driven by differences in trade policy. We propose that it can be explained by systematic differences in the degree of political accountability. In other words, a democracy trade more with the rest of the world because democratically elected politicians are less tempted to use trade taxes to extract rents and because these politicians face the right incentives to build institutions that weed out trade-distorting red tape in the customs service.

Table 1: OLS Results – Dependent Variable: log of real imports

	Polity IV		**Freedom House**		**Przeworski et al.**	
autocracy$_{i\ t-1}$	-0.018***	–	-0.055***	–	-0.237***	–
	-17.56		*-11.21*		*-16.33*	
autocracy$_{e\ t-1}$	-0.012***	–	-0.050***	–	-0.202***	–
	-12.03		*-10.21*		*-14.17*	
average autocracy$_{i\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.023***	–	-0.079***	–	-0.286***
		-18.53		*-12.56*		*-16.09*
average autocracy$_{e\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.014***	–	-0.046***	–	-0.218***
		-11.07		*-7.15*		*-12.48*
log GDP$_i$	1.327***	1.299***	1.260***	1.209***	1.318***	1.272***
	67.33	*58.22*	*50.15*	*39.72*	*67.13*	*57.07*
log GDP$_e$	1.277***	1.318***	1.230***	1.287***	1.266***	1.302***
	66.76	*61.37*	*50.53*	*43.46*	*66.71*	*61.08*
landlocked	-0.069**	0.031	-0.168***	-0.066*	-0.100***	-0.002
	-2.04	*0.82*	*-4.72*	*-1.62*	*-2.97*	*-0.06*
common language	0.421***	0.390***	0.419***	0.374***	0.431***	0.399***
	33.12	*29.49*	*30.85*	*26.00*	*34.44*	*30.32*
common border	0.468***	0.386***	0.369***	0.250***	0.430***	0.341***
	17.96	*13.97*	*12.84*	*7.90*	*16.56*	*12.35*
colonial ties	0.596***	0.551***	0.614***	0.564***	0.641***	0.599***
	18.32	*17.32*	*18.00*	*16.83*	*20.23*	*19.28*
common colonizer	0.636***	0.545***	0.556***	0.448***	0.664***	0.591***
	31.37	*24.36*	*25.20*	*17.46*	*33.15*	*26.47*
colony post 1945	1.123***	1.029***	1.003***	0.931***	1.082***	0.985***
	27.04	*25.52*	*23.13*	*22.14*	*26.62*	*24.83*
same country	0.917***	0.809***	0.738***	0.359***	0.898***	0.783***
	25.32	*20.37*	*17.43*	*6.97*	*24.75*	*19.60*
log distance	-1.021***	-0.998***	-1.096***	-1.068***	-1.041***	-1.021***
	-164.59	*-152.55*	*-165.70*	*-148.52*	*-170.99*	*-157.87*
Observations	188,163	140,393	154,975	106,446	195,507	144,585
Importers	126	122	133	128	133	128
Exporters	126	123	133	129	133	129
R-squared	0.7247	0.7421	0.7317	0.7541	0.7259	0.7424

Notes: *average autocracy*$_{(t\text{-}1\text{–}t\text{-}5)}$ represents the average of the five years prior to the observation; $_i$ and $_e$ indicate importing and exporting country, respectively. Polity IV is the Variable "poliy2" from Gurr et al. (2003) and is transformed to run from 1 to 21, Freedom House is the average of the "civil liberties" and "political rights" indicators from Freedom House (2006) and ranges from 1 to 7, higher numbers reflect higher levels of autocracy in both cases. Przeworski et al. is a dummy variable that takes the value of 1 for autocratic states. It is taken from Alvarez et al. (1996) and Przeworski et al. (2000) with updates until 2000 coming from Cheibub and Ghandi (2004).
All regressions contain importer-, exporter- and time-specific fixed effects all of which are significant at the 1% level. */**/*** indicates significance at the 10/5/1-% significance level; t-statistics are given in italics below the coefficient.

Table 2: OLS Results with Restriction Index– Dependent Variable: log of real imports

	Polity IV		**Freedom House**		**Przeworski et al.**	
autocracy$_{i\ t-1}$	-0.013***	–	-0.054***	–	-0.161***	–
	-8.98		*-8.54*		*-8.42*	
autocracy$_{e\ t-1}$	-0.013***	–	-0.063***	–	-0.180***	–
	-9.13		*-10.12*		*-9.59*	
average autocracy$_{i\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.019***	–	-0.082***	–	-0.215***
		-11.94		*-10.29*		*-9.82*
average autocracy$_{e\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.013***	–	-0.055***	–	-0.179***
		-8.44		*-6.91*		*-8.31*
restriction index$_i$	0.109***	0.104***	0.123***	0.138***	0.118***	0.109***
	10.71	*10.12*	*11.86*	*12.46*	*11.61*	*10.61*
restriction index$_e$	0.020*	0.022**	0.015	-0.014	0.026**	0.020*
	1.95	*2.16*	*1.48*	*-1.28*	*2.57*	*1.95*
log GDP$_i$	1.185***	1.152***	1.134***	1.051***	1.168***	1.117***
	41.95	*40.39*	*36.92*	*28.50*	*41.34*	*39.01*
log GDP$_e$	1.316***	1.339***	1.268***	1.253***	1.298***	1.315***
	47.50	*48.15*	*41.98*	*34.54*	*46.99*	*47.34*
landlocked	-0.077	-0.053	-0.066	-0.063	-0.090*	-0.096*
	-1.45	*-0.97*	*-1.22*	*-1.13*	*-1.69*	*-1.76*
common language	0.395***	0.356***	0.388***	0.307***	0.392***	0.352***
	22.99	*20.78*	*22.02*	*16.64*	*22.78*	*20.38*
common border	0.137***	0.109***	0.131***	0.154***	0.112***	0.083***
	3.91	*3.08*	*3.63*	*4.05*	*3.17*	*2.32*
colonial ties	0.442***	0.417***	0.402***	0.369***	0.434***	0.411***
	10.82	*10.74*	*9.61*	*8.99*	*10.58*	*10.53*
common colonizer	0.333***	0.318***	0.330***	0.266***	0.365***	0.345***
	11.58	*10.75*	*11.25*	*8.39*	*12.52*	*11.41*
colony post 1945	0.900***	0.919***	0.876***	0.873***	0.911***	0.913***
	12.68	*13.60*	*12.09*	*12.25*	*12.47*	*13.12*
same country	0.668***	0.547***	0.608***	0.267***	0.681***	0.551***
	13.42	*10.53*	*11.84*	*4.63*	*13.57*	*10.49*
log distance	-1.095***	-1.050***	-1.107***	-1.063***	-1.107***	-1.063***
	-132.76	*-126.43*	*-131.96*	*-120.51*	*-134.16*	*-127.26*
Observations	92,417	77,660	86,640	62,131	94,050	78,827
Importers	75	74	77	75	77	75
Exporters	75	75	77	76	77	76
R-squared	0.7247	0.7421	0.7369	0.7562	0.7337	0.7423

Notes: See notes to Table 1 for the explanation of the autocracy data. The trade restriction index is taken from Dreher (2006).
All regressions contain importer-, exporter- and time-specific fixed effects all of which are significant at the 1% level.
*/**/*** indicates significance at the 10/5/1-% significance level; t-statistics are given in *italics* below the coefficient.

Table 3: OLS Results Additional Variables – Dependent Variable: log of real imports

Additional Variable(s)		Polity IV		Freedom House		Przeworski et al.	
log GDP	**autoc**$_{i\ t-1}$	-0.012***	–	-0.055***	–	-0.159***	–
per capita	**autoc**$_{e\ t-1}$	-0.013***	–	-0.065***	–	-0.178***	–
(i and e)	**autoc**$_{i\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.019***	–	-0.079***	–	-0.214***
	autoc$_{e\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.013***	–	-0.053***	–	-0.179***
log population	**autoc**$_{i\ t-1}$	-0.012***	–	-0.055***	–	-0.159***	–
(i and e)	**autoc**$_{e\ t-1}$	-0.013***	–	-0.065***	–	-0.178***	–
	autoc$_{i\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.019***	–	-0.079***	–	-0.214***
	autoc$_{e\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.013***	–	-0.053***	–	-0.179***
common	**autoc**$_{i\ t-1}$	-0.015***	–	-0.054***	–	-0.173***	–
currency	**autoc**$_{e\ t-1}$	-0.015***	–	-0.060***	–	-0.188***	–
	autoc$_{i\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.020***	–	-0.083***	–	-0.232***
	autoc$_{e\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.015***	–	-0.052***	–	-0.197***
generalized	**autoc**$_{i\ t-1}$	-0.015***	–	-0.053***	–	-0.173***	–
system of	**autoc**$_{e\ t-1}$	-0.015***	–	-0.060***	–	-0.189***	–
preferences	**autoc**$_{i\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.020***	–	-0.082***	–	-0.233***
	autoc$_{e\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.015***	–	-0.051***	–	-0.198***
regional	**autoc**$_{i\ t-1}$	-0.014***	–	-0.053***	–	-0.173***	–
trade	**autoc**$_{e\ t-1}$	-0.014***	–	-0.059***	–	-0.188***	–
agreement	**autoc**$_{i\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.019***	–	-0.081***	–	-0.228***
	autoc$_{e\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.014***	–	-0.050***	–	-0.193***
WTO	**autoc**$_{i\ t-1}$	-0.013***	–	-0.054***	–	-0.160***	–
membership	**autoc**$_{e\ t-1}$	-0.013***	–	-0.063***	–	-0.179***	–
(i and e)	**autoc**$_{i\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.019***	–	-0.082***	–	-0.215***
	autoc$_{e\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.013***	–	-0.054***	–	-0.178***
all of the	**autoc**$_{i\ t-1}$	-0.014***	–	-0.054***	–	-0.170***	–
above[a]	**autoc**$_{e\ t-1}$	-0.014***	–	-0.060***	–	-0.186***	–
	autoc$_{i\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.019***	–	-0.077***	–	-0.226***
	autoc$_{e\ (t\text{-}1\text{–}t\text{-}5)}$	–	-0.014***	–	-0.048***	–	-0.192***

Notes: *autoc* $_{t-1}$ represents the one year lagged autocracy score while *autoc* $_{(t\text{-}1\text{–}t\text{-}5)}$ is the average of the five years prior to the observation; $_i$ and $_e$ stand for importing and exporting country, respectively; (i and e) indicate separate variables for importing and exporting countries. See notes to Table 1 for the explanation of the autocracy data. Only the results for the autocracy variables are shown in the table. However, the base specification is taken from Table 2.
All regressions contain importer-, exporter- and time-specific fixed effects all of which are significant at the 1% level.
*/**/*** indicates significance at the 10/5/1-% significance level.
[a] Due to perfect collinearity population is excluded in the estimation.

Table 4: Results Alternative Techniques and Samples – Dependent Variable: log of real imports

Technique / Sample		**Polity IV**		**Freedom House**		**Przeworski et al.**	
reweighted least squares (RLS)	**autoc**$_{i\ t-1}$	-0.008***	–	-0.033***	–	-0.072***	–
	autoc$_{e\ t-1}$	-0.013***	–	-0.059***	–	-0.161***	–
	autoc$_{i\ (t\text{-}1\text{-}t\text{-}5)}$	–	-0.012***	–	-0.046***	–	-0.110***
	autoc$_{e\ (t\text{-}1\text{-}t\text{-}5)}$	–	-0.013***	–	-0.047***	–	-0.172***
least absolute value (LAV aka MAD)	**autoc**$_{i\ t-1}$	-0.004***	–	-0.033***	–	-0.043***	–
	autoc$_{e\ t-1}$	-0.013***	–	-0.060***	–	-0.171***	–
	autoc$_{i\ (t\text{-}1\text{-}t\text{-}5)}$	–	-0.009***	–	-0.042***	–	-0.080***
	autoc$_{e\ (t\text{-}1\text{-}t\text{-}5)}$	–	-0.013***	–	-0.055***	–	-0.176***
extended sample up to 2003	**autoc**$_{i\ t-1}$	-0.012***	–	-0.047***	–	-0.162***	–
	autoc$_{e\ t-1}$	-0.011***	–	-0.061***	–	-0.181***	–
	autoc$_{i\ (t\text{-}1\text{-}t\text{-}5)}$	–	-0.019***	–	-0.064***	–	-0.209***
	autoc$_{e\ (t\text{-}1\text{-}t\text{-}5)}$	–	-0.015***	–	-0.054***	–	-0.183***
importer is developing	**autoc**$_{i\ t-1}$	-0.005***	–	-0.045***	–	-0.088***	–
	autoc$_{e\ t-1}$	-0.021***	–	-0.083***	–	-0.289***	–
	autoc$_{i\ (t\text{-}1\text{-}t\text{-}5)}$	–	-0.015***	–	-0.072***	–	-0.166***
	autoc$_{e\ (t\text{-}1\text{-}t\text{-}5)}$	–	-0.020***	–	-0.066***	–	-0.282***
exporter is developing	**autoc**$_{i\ t-1}$	-0.020***	–	-0.051***	–	-0.247***	–
	autoc$_{e\ t-1}$	-0.002	–	-0.038***	–	-0.070***	–
	autoc$_{i\ (t\text{-}1\text{-}t\text{-}5)}$	–	-0.024***	–	-0.070***	–	-0.306***
	autoc$_{e\ (t\text{-}1\text{-}t\text{-}5)}$	–	-0.004**	–	-0.030***	–	-0.075***
Instrumental Variables	**autoc**$_{i\ t-1}$	-0.048***	–	-0.265***	–	-0.757***	–
	autoc$_{e\ t-1}$	-0.012	–	-0.064	–	-0.260	–
	Sargan-Hansen	*0.136*	–	*0.715*	–	*0.236*	–
	autoc$_{i\ (t\text{-}1\text{-}t\text{-}5)}$	–	-0.068***	–	-0.367***	–	-1.004***
	autoc$_{e\ (t\text{-}1\text{-}t\text{-}5)}$	–	-0.010	–	-0.116**	–	-0.266
	Sargan-Hansen	–	*0.041*	–	*0.106*	–	*0.126*

Notes: See notes to Tables 1 and 3 for explanations on the autocracy data and the abreviations used. Only the results for the autocracy variables are shown in the table. However, the base specification is taken from Table 2. In the Instrumental Variables regressions *Sargan-Hansen* reports the p-values for the test of overidentification. We instrument the autocracy variables by average party age, amount of checks and balances as well as voting in line with the G7 in the UN General assembly. The first stage F-statistic, indicating the power of the instruments, easily passes the threshold of 10 as proposed by Staiger and Stock (1997) in all specifications.
All regressions contain importer-, exporter- and time-specific fixed effects all of which are significant at the 1% level.
*/**/*** indicates significance at the 10/5/1-% significance level.

Table 5: Definitions and Sources of Variables

Variable	Description	Source
nimp	nominal imports in dollars (for 1962-2000) (for 2001-2003)	Feenstra (2000) Comtrade (2006)
defl	US GDP deflator (2000 = 1)	IMF (2005)
log of real imports	ln (nimp/defl)	own calculations
Polity IV⋆	inverse of "polity2" indicator: 1 = most democratic, 21 = most autocratic	Gurr et al. (2003)
Freedom House⋆	average of "political rights" and "civil liberties" indicators: 1 = most democratic, 7 = most autocratic	Freedom House (2006)
Przeworski et al.⋆	dummy variable taking the value of 1 for autocratic states	Alvarez et al. (1996); Przeworski et al. (2000); Cheibub and Gandhi (2004)
log GDP⋆	ln (GDP) (constant 2000 US$)	World Bank (2006)
landlocked	dummy for at least one trading partner being landlocked	CEPII (2006)
common language	dummy for both trading partners sharing an official language	CEPII (2006)
common border	dummy for common border	CEPII (2006)
colonial ties	dummy for pairs ever in colonial relationship	CEPII (2006)
common colonizer	dummy for common colonizer post 1945	CEPII (2006)
colony post 1945	dummy for pairs in colonial relationship post 1945	CEPII (2006)
same country	1 if countries were or are the same country	CEPII (2006)
log distance	ln of simple distance (most populated cities, km)	CEPII (2006)
restriction index⋆	sub-index economic restrictions of the KOF Index of Globalization; combines data on hidden import barriers, mean tariff rate, taxes on international trade (in percent of current revenue) and capital account restrictions	Dreher (2006)
log GDP per capita⋆	ln (GDP/population) (constant 2000 US$)	World Bank (2006)
log population	ln (total population)	World Bank (2006)
common currency	dummy for pairs with a common currency	Rose (2004)
generalized system of preferences	dummy for pairs with a generalized system of preferences (GSP)	Rose (2004)
regional trade agreement	dummy for pairs that are a member of the same regional trade agreement	Rose (2004)
WTO membership⋆	dummy for WTO/GATT members	WTO (2007)

⋆ for these variables $_i$ and $_e$ indicate the values of an importing and exporting country, respectively.

References

Acemoglu, D., Johnson, S., Robinson, J.A. and Yared, P. (2005) Income and Democracy, CEPR Discussion Paper No. 5273.

Acemoglu, D. and Robinson, J. (2001) A Theory of Political Transitions, *American Economic Review* 91(4): 938-963.

Aidt, T.S. (1997) Cooperative Lobbying and Endogenous Trade Policy. *Public Choice* 93(3-4): 455-475.

Aidt, T.S. and Dutta, J. (2004) Transitional Politics: Emerging Incentive-based Instruments in Environmental Regulation, *Journal of Environmental Economics and Management* 47(3): 458-479.

Aidt, T.S. and Eterovic, D. (2007) Give and Take: Political Competition, Participation and Public Finance in 20th Century Latin America. Faculty of Economics, University of Cambridge, Cambridge Working Papers in Economics 0714.

Alvarez, M., Cheibub, J.A., Limongi, F. and Przeworski. A. (1996) Classifying Political Regimes, *Studies in Comparative International Development* 31(2): 3-34.

Anderson, J.E. and van Wincoop, E. (2003) Gravity with Gravitas: A Solution to the Border Puzzle, *American Economic Review* 93(1): 170-192.

Baldwin, R. (2006) The Euro's Trade Effects, European Central Bank Working Paper WPS/594.

Baltagi, B.H., Egger, P. and Pfaffenmayer, M. (2003) A Generalized Design for Bilateral Trade Flow Models, *Economics Letters* 80(3): 391-397.

Barro, R. (1999) Determinants of Democracy, *Journal of Political Economy* 107(S6): S158-S183.

Beck, T., Clarke, G., Groff, A., Keefer, P. and Walsh, P. (2001) New Tools in Comparative Political Economy: The Database of Political Institutions, *World Bank Economic Review* 15(1): 165-176.

Becker, G. and Stigler, G. (1974) Law Enforcement, Malfeasance and the Compensation of Enforcers, *Journal of Legal Studies* 3(1): 1-19.

Boockmann, B. and Dreher, A. (2003) The Contribution of the IMF and the World Bank to Economic Freedom, *European Journal of Political Economy* 19(3): 633-649.

Bjørnskov, C. (2005) Does Political Ideology Affect Economic Growth? *Public Choice* 123(1-2): 133-146.

Bjørnskov, C. (2006) Globalization and Economic Freedom, mimeo.

Brennan, J. and Buchanan, J. (1980) *The Power to Tax: Analytical Foundations of a Fiscal Constitution*, Cambridge, UK: Cambridge University Press.

Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) (2006) *Distances database*; Available at http://www.cepii.fr/anglaisgraph/bdd/distances.htm.

Cheibub, J.A. and Gandhi, J. (2004) Classifying Political Regimes: A Six-Fold Measure of Democracies and Dictatorships, Paper prepared for the Annual Meeting of the American Political Science Association, Chicago, September 2004.

Comtrade (2006) The United Nations Statistical Division Commodity Trade Data Base; Available at http://unstats.un.org/unsd/comtrade/default.aspx.

Dai, X. (2002) Political Regimes and International Trade: The Democratic Difference Revisisted, *American Political Science Review* 96(1): 159-165.

De Haan, J. and Siermann, C.L.J. (1996) New Evidence on the Relationship between Democracy and Economic Growth, *Public Choice* 86(1-2): 175-198.

De Haan, J. and Sturm, J.-E. (2000) On the Relationship between Economic Freedom and Economic Growth, *European Journal of Political Economy* 16(2): 215-241.

Dreher, A. (2006) Does Globalization Affect Growth? Evidence from a New Index of Globalization, *Applied Economics* 38(10): 1091-1110.

Dreher, A. and Sturm, J.-E. (2006) Do IMF and World Bank Influence Voting in the UN General Assembly? CESifo Working Paper No. 1724.

Dreher, A. and Rupprecht, S. (2007) IMF Programs and Reform – Inhibition or Encouragement? *Economics Letters* 95(3): 320-326.

Feenstra, R. (2000) NBER-United Nations Trade Data 1962-2000; Available at http://cid.econ.ucdavis.edu/data/undata/undata.html.

Feenstra, R. (2004) *Advanced International Trade: Theory and Evidence*, Princeton: Princeton University Press.

Freedom House (2006) *Freedom in the World 2006: The Annual Survey of Political Rights and Civil Liberties*, Washington, D.C.: Freedom House.

Ferejohn, J. (1986) Incumbent Performance and Electoral Control, *Public Choice* 50(1-3): 5-25.

Gassebner, M., Gaston, N. and Lamla, M. (2007) The Inverse Domino Effect: Are Economic Reforms Contagious? mimeo.

Giavazzi, F. and Tabellini, G. (2005) Economic and Political Liberalizations, *Journal of Monetary Economics* 52(7): 1297-1330.

Gorodnichenko, Y. and Sabirianova Peter, K. (2007) Public Sector Pay and Corruption: Measuring Bribery from Micro Data, *Journal of Public Economics* 91(5-6): 963-991.

Grossman, G. M. and Helpman, E. (1994) Protection for Sale, *American Economic Review* 84(4): 833-850.

Gurr, T.R., Jaggers, K. and Moore, W. (2003) *Polity Handbook IV*, Boulder: University of Colorado Press.

Hillman, A. L. (1982) Declining Industries and Political-Support Protectionists Moves, *American Economic Review* 72(5): 1180-1190.

Hillman, A.L. (1989) *The Political Economy of Protection*, Chur: Harwood Publishers.

International Monetary Found (IMF) (2005) *International Financial Statistics*, Washington, D.C.: International Monetary Found.

Keefer, P. and Stasavage, D. (2003) The Limits of Delegation: Veto Players, Central Bank Independence and the Credibility of Monetary Policy, *American Political Science Review* 97(3): 407-423.

Lopez-Cordova, J. E. and Meisner, C.M. (2005) The Globalization of Trade and Democracy, 1870-2000, NBER Working Paper No. 11117.

Mansfield, E.D., Milner, H.V. and Rosendorff, B.P. (2000) Free to Trade: Democracies, Autocracies, and International Trade, *American Political Science Review* 94(2): 305-321.

Mansfield, E.D., Milner, H.V. and Rosendorff, B.P. (2002) Replication, Realism, and Robustness: Analysing Political Regimes and International Trade, *American Political Science Review* 96(1): 167-169.

Mayer, W. (1984) Endogenous Tariff Formation, *American Economic Review* 74(5): 970-985.

Milner, H.V. and Kubota, K. (2005) Why the Move to Free Trade? Democracy and Trade Policy in the Developing Countries, *International Organization* 59(1): 107-143.

Morrow, J.D., Siverson, R.M. and Tabares, T.E. (1998) The Political Determinants of International Trade: The Major Powers, 1907-90, *American Political Science Review* 92(3): 649-661.

Nieswiadomy, M.L. and Strazicich, M.C. (2004) Are Political Freedoms Converging? *Economic Inquiry* 42(2): 323-340.

Olken, B.A. (2006) Corruption and the Costs of Redistribution: Micro Evidence From Indonesia. *Journal of Public Economics* 90(4-5): 853-870.

O'Rourke, K.H. and Taylor, A.M. (2007) Democracy and Protectionism, in: T.J. Hatton, K.H. O'Rourke and A.M. Taylor (eds.) *The New Comparative Economic History*, Cambridge, MA: MIT Press, 193-216.

Persson, T. and Tabellini, G. (2000) *Political Economics: Explaining Economic Policy*, Cambridge, MA: MIT Press.

Putnam, R.D. 1988. Diplomacy and Domestic Politics: The Logic of Two-level Games, *International Organization* 42(3): 427-460.

Przeworski, A., Alvarez, M., Cheibub, J.A. and Limongi, F. (2000) *Democracy and Development: Political Regimes and Economic Well-being in the World, 1950-1990*, New York: Cambridge University Press.

Rigobon, R. and Rodrik, D. (2004) The Rule of Law, Democracy, Openness and Income: Estimating the Interrelationships, CEPR Discussion Paper No. 4653.

Rose, A.K. (2004) Do We Really Know that the WTO Increases Trade? *American Economic Review* 94(1): 98-114.

Staiger, D. and Stock, J.H. (1997) Instrumental Variables Regression with Weak Insturments, *Econometrica* 63(3): 557-586.

Sturm, J.-E. and de Haan, J. (2001) How Robust is the Relationship between Economic Freedom and Economic Growth Really? *Applied Economics* 33(7): 839-844.

Sturm, J.-E. and de Haan, J. (2003) Does More Democracy Lead to Greater Economic Freedom? New Evidence for Developing Countries, *European Journal of Political Economy* 19(3): 547-563.

World Bank (2006) *World Development Indicators*, Washington, D.C.: World Bank.

World Trade Organization (WTO) (2007) WTO homepage; Available at: www.wto.org